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10/636,002	08/07/2003	Gordon W. Braudaway	YOR920030309US1	1549
<p>7590 01/10/2007 Louis P. Herzberg Intellectual Property Law Dept. IBM Corporation P.O.Box 218 Yorktown Heights, NY 10598</p>			<p>EXAMINER LAROSE, COLIN M</p>	
			ART UNIT	PAPER NUMBER
			2624	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
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Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/636,002

Applicant(s)

BRAUDAWAY ET AL.

Examiner

Colin M. LaRose

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12, 13, 15 and 16 is/are allowed.
- 6) ☒ Claim(s) 1-11 and 17-21 is/are rejected.
- 7) ☒ Claim(s) 14 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Objections

1. Claim 14 is objected to because of the following informality: it appears this claim should depend from claim 12 and not claim 1. This is presumed to be a typo. Appropriate correction is required.
2. Claim 12 is objected to because of the following informality: in the "forming" limitation, "enlarged of reduced" should be changed to "enlarged or reduced."
3. Claim 2 is objected to because of the following informality: "an nearly" should be changed to "as nearly"

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 9 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
6. Claim 9 improperly incorporates the "functions" of claim 7. Claim 7 is an apparatus claim and is defined by "means" rather than "functions" as in a method claim. Furthermore, it is unclear how computer program code could implement, or "effect," means recitations. Appropriate correction or clarification is required.
7. Claim 19 is a "method" claim that improperly depends from a "device" claim (i.e. claim 16). Appropriate correction is required.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 17 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by "Geometric Distortion Correction Through Image Normalization" by Alghoniemy et al. ("Alghoniemy").

Regarding claim 17, Alghoniemy discloses a method (decoder of figure 1) comprising detecting a watermark imbedded in a candidate image employing a bounding rectangle, including the steps of:

recalling dimensions of the bounding rectangle used to produce a resized source image from which the candidate image was produced ("image normalization" uses the process in § 2.2 to determine the horizontal and vertical dimensions, al_x and bl_y , of a bounding rectangle corresponding to the dimensions used for normalizing the image for watermark embedding);

forming a resized image by resizing the horizontal and vertical dimensions of said candidate image by a common factor, so that the resized image is a largest replica of said candidate image fitting entirely within the bounding rectangle (equation (10) resizes the image so that it has dimensions al_x and bl_y , where the scaling factors a and b may be common – i.e. have the same value – in the case of symmetric scaling – see § 2.2)

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reproducing the watermark suspected of being in the candidate image (figure 1: "watermark detection" extracts a putative watermark); and
attempting detection of the watermark in the candidate image (figure 1: "watermark detection" represents an attempt to detect the watermark).

Regarding claim 18, Alghoniemy discloses employing results obtained from the step of attempting (i.e. the results are used to determine whether the image is authentic).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 7,095,873 by Venkatesan et al. ("Venkatesan") in view of "Geometric Distortion Correction Through Image Normalization" by Alghoniemy et al. ("Alghoniemy").

Regarding claims 1 and 7, Venkatesan discloses a method (figure 6) and apparatus (figure 5) comprising steps/means for:

obtaining a digitized image to be protected by a watermark (610, figure 6);
resizing the image to a fixed (rectangular) size having known horizontal and vertical dimensions (612, figure 6, and column 14/65-66: image is normalized to a fixed size via bicubic interpolation); and

imbedding said watermark into said resized image to form a watermarked image (650, figure 6).

While Venkatesan teaches resizing the image to a fixed size, Venkatesan does not expressly disclose the step of:

forming a resized image by resizing the horizontal dimension by a horizontal factor and the vertical dimension by a vertical factor, so that the resized image is a largest replica of said digitized image fitting entirely within the bounding rectangle (i.e. the horizontal and vertical dimensions).

Alghoniemy discloses a method (see figure 1) for normalizing an image prior to embedding a watermark therein. Like Venkatesan, Alghoniemy normalizes the image to a fixed size before the embedding process. In § 2.2, Alghoniemy specifies a bounding rectangle of a normalized image having dimensions al_x and bl_y , which correspond to scaled horizontal and vertical dimensions of the original image. Then, a resized image is formed by resizing the horizontal dimension by a horizontal factor (a) and the vertical dimension by a vertical factor (b), so that the resized image is a largest replica of said digitized image fitting entirely within the bounding rectangle (i.e. equation (10) resizes the image so that it has dimensions al_x and bl_y).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Venkatesan by Alghoniemy to achieve the claimed invention since Venkatesan discloses resizing the image to a fixed size prior to embedding a watermark therein, and Alghoniemy teaches that the claimed details of such a resizing process are conventional and well known to those skilled in the art. That is, Alghoniemy shows that specifying desired output dimensions, corresponding to a bounding rectangle, and then scaling the image by horizontal and

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vertical magnification factors in order to resize the image so that it is the largest replica of the original image fitting entirely within the bounding rectangle is a conventional way of resizing an image to be encoded with a watermark. Alghoniemy teaches that such a normalization process allows the embedded image to be more robust to malicious attacks (see § 4).

Regarding claims 2 and 8, Alghoniemy discloses forming at least one derivative copy of said watermarked image, each copy preserving the ratio of horizontal dimension to vertical dimension as nearly as practicable (figure 1: embedded image is resized to original size).

Regarding claim 3, Alghoniemy discloses that the horizontal factor and the vertical factor are equal (§ 2.2: scaling can be symmetric).

Regarding claim 4, Alghoniemy teaches that both the horizontal factor and the vertical factor can be greater than 0.125 (see e.g. figures 2 and 5).

Regarding claim 5, the combination of Venkatesan and Alghoniemy teaches an article of manufacture comprising a computer usable medium having computer readable program code means embodied therein for causing watermark insertion, the computer readable program code means in said article of manufacture comprising computer readable program code means for causing a computer to effect the steps of claim 1 (see e.g. Venkatesan, column 20, line 54 et seq.).

Regarding claim 6, the combination of Venkatesan and Alghoniemy teaches a program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for watermarking, said method steps comprising the steps of claim 1 (see e.g. Venkatesan, column 20, line 54 et seq.).

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Regarding claim 9, the combination of Venkatesan and Alghoniemy teaches a computer program product comprising a computer usable medium having computer readable program code means embodied therein for causing watermark insertion, the computer readable program code means in said computer program product comprising computer readable program code means for causing a computer to effect the functions of claim 7 (see e.g. Venkatesan, column 20, line 54 et seq.).

Regarding claim 10, Venkatesan discloses a method (figure 6) comprising inserting a watermark into at least one derivative image, including the steps of:

providing a source digital image (610) having at least one image plane, each said image plane being represented by an array having pixel brightness data for a plurality of pixels, each of said pixels having at least one color component and having a pixel position (column 6, lines 35-39 and 61-64: each of Venkatesan's pixels include at least one color component and inherently have a position within the image);

resizing the image to a fixed (rectangular) size having known horizontal and vertical dimensions (612, figure 6, and column 14/65-66: image is normalized to a fixed size via bicubic interpolation)

inserting into said adjusted digital image an invisible image watermark (650).

While Venkatesan teaches resizing the image to a fixed size, Venkatesan does not expressly disclose:

specifying horizontal and vertical dimensions of a bounding rectangle;

resizing the source image by enlargement or reduction of its horizontal and vertical dimensions to form an adjusted image so that the resized image is a largest replica of said digitized image fitting entirely within the bounding rectangle (i.e. the horizontal and vertical dimensions); and

producing at least one derived image by resizing the watermarked adjusted image.

Alghoniemy discloses a method (see figure 1) for normalizing an image prior to embedding a watermark therein. Like Venkatesan, Alghoniemy normalizes the image to a fixed size before the embedding process. In § 2.2, Alghoniemy specifies a bounding rectangle of a normalized image having dimensions al_x and bl_y , which correspond to scaled horizontal and vertical dimensions of the original image. Then, a resized image is formed by resizing the horizontal dimension by a horizontal factor (a) and the vertical dimension by a vertical factor (b), so that the resized image is a largest replica of said digitized image fitting entirely within the bounding rectangle (i.e. equation (10) resizes the image so that it has dimensions al_x and bl_y). After embedding, the image is restored to its original size (see figure 1).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Venkatesan by Alghoniemy to achieve the claimed invention since Venkatesan discloses resizing the image to a fixed size prior to embedding a watermark therein, and Alghoniemy teaches that the claimed details of such a resizing process are conventional and well known to those skilled in the art. That is, Alghoniemy shows that specifying desired output dimensions, corresponding to a bounding rectangle, and then scaling the image by horizontal and vertical magnification factors in order to resize the image so that it is the largest replica of the original image fitting entirely within the bounding rectangle is a conventional way of resizing an

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image to be encoded with a watermark. Alghoniemy teaches that such a normalization process allows the embedded image to be more robust to malicious attacks (see § 4). Furthermore, Alghoniemy shows that it is conventional to return the normalized image to its original size after embedding – this is an obvious expedient in the situations where the user does not wish the dimensions of the image to be changed by the watermarking process.

Regarding claim 11, the combination of Venkatesan and Alghoniemy teaches an article of manufacture comprising a computer usable medium having computer readable program code means embodied therein for causing watermark insertion, the computer readable program code means in said article of manufacture comprising computer readable program code means for causing a computer to effect the steps of claim 10 (see e.g. Venkatesan, column 20, line 54 et seq.).

12. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Geometric Distortion Correction Through Image Normalization" by Alghoniemy et al. ("Alghoniemy").

Regarding claims 20 and 21, Alghoniemy does not expressly disclose an article of manufacture or program storage device for implementing the steps of claim 17, however such methods of implementation would have been well known to those skilled in the art at the time the invention was made. Alghoniemy's method is intended to be implemented in a computer, and it was well known that computer-implemented methods were generally effected via computer programs, software, and the like, as claimed. Official notice taken.

Allowable Subject Matter

13. Claim 19 would be allowable if rewritten or amended to overcome the rejection under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

14. Claim 14 would be allowable if rewritten or amended to overcome the objection thereto set forth in this Office action.

15. Claims 12, 13, 15, and 16 are allowed. Regarding claim 12, the combination of Venkatesan and Alghoniemy does not fairly disclose or suggest the details of the forming and resizing steps, as claimed, in combination with the other limitations of the claim.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Colin M. LaRose whose telephone number is (571) 272-7423. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella, can be reached on (571) 272-7778. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

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like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000. Any inquiry of a general nature or relating to the status of this application or proceeding can also be directed to the TC 2600 Customer Service Office whose telephone number is (571) 272-2600.



Colin M. LaRose
Group Art Unit 2624
8 January 2007